



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,917	01/11/2005	Aymeric Perchant	0501-1114	5145
22511	7590	11/24/2009		
OSHA LIANG I.L.P. TWO HOUSTON CENTER 909 FANNIN, SUITE 3500 HOUSTON, TX 77010			EXAMINER ALLISON, ANDRAE S	
			ART UNIT 2624	PAPER NUMBER
			NOTIFICATION DATE 11/24/2009	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@oshaliang.com  
buta@oshaliang.com

# Office Action Summary

**Application No.**

10/520,917

**Applicant(s)**

PERCHANT ET AL.

**Examiner**

ANDRAE S. ALLISON

**Art Unit**

2624

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on RCE filed 09/08/2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 17, 26-30 and 32-34 is/are rejected.
- 7) ☒ Claim(s) 11-16, 18-25 and 31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on June 22, 2009 and September 8, 2009 has been entered. Claims 1-34 are pending.

### ***Response to Remarks***

#### **Claim Rejections – 35 USC section § 102&103**

The declaration filed on June 22, 2009 under 37 CFR 1.131 has been considered but is ineffective to overcome the Shankar reference.

The translated lab or WTO member country prior to the effective date of the Shankar reference because the Examiner was unable to ascertain the exact date of reduction. The only activity recorded before December 6, 2001 was image acquisition. However, for an actual reduction to practice, the invention must have been sufficiently tested to demonstrate that it will work for its intended purpose, but it need not be in a commercially satisfactory stage of development. See, e.g., Scott v. Finney, 34 F.3d 1058, 1062, 32 USPQ2d 1115, 1118-19 (Fed.Cir. 1994).

Since the date for reduction to practice is the filing date of the application, the evidence submitted establishing diligence is sufficient.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Shankar et al (US Patent No.: 6,885,801).

As to independent claim 1, Shankar discloses a method for processing an image acquired by means of a guide consisting of a plurality of optical fibres (method for enhancing images acquired through a fiber endoscope – column 1, lines 23-29), characterized in that, for each optical fibre, a zone corresponding to this optical fibre is isolated on the acquired, each zone is locally processed individually image (see column 2, lines 47-57 – where each fiber is isolated and processed individually), then the acquired image is reconstructed eliminating the pattern due to the optical fibres (see column 5, lines 40-45, where interpolation is carried out to produce a final image).

As to independent claim 32, this claim differs from claim 1 only in that claim 32 is apparatus whereas, claim 1 is method and the limitations means for isolating, means for locally processing each zone individually, and means for reconstructing additively recited. Shankar clearly teaches a system comprising: means for isolating (208, 209 - see Fig 2), means for locally processing each zone individually (205 - see Fig 2), and means for reconstructing (230 - see Fig 2).

As to claim 2, Shankar teaches the method, characterized in that, in order to isolate each zone, a mask, corresponding to the pattern of the fibres, is applied to the acquired image (see column 2, lines 55-67).

As to claim 3, Shankar teaches the method, characterized in that the mask, corresponding to an image of the related components representing each fibre, is obtained during a stage of detecting the fibres from a reference image (note that a template is selected from a lookup table - see column 2, lines 55-67).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shankar et al (US Patent No.: 6,885,801) in view of Harris et al (NPL Document titled: Hybrid Image Segmentation Using Watersheds and Fast Region Merging).

As to claim 4, Shankar does not expressly disclose the method characterized in that the stage of detecting the fibres comprises the following stages: prefiltering of the reference image, segmentation by region, correction of segments having an abnormally large surface, and correction of segments having an abnormally small surface. Haris discloses an image segmentation algorithm (see abstract) which includes the steps of prefiltering of the reference image (see page 1687, section IV, [p][001], lines 1-9), segmentation by region (see page 1687, section IV, [p][001], lines 1-9), correction of segments having an abnormally large surface, and correction of segments having an abnormally small surface (see page 1687, section IV, [p][001], lines 9-18). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to added to image segmentation algorithm of Haris to the method for enhancing images acquired through a fiber endoscope of Shankar to partition the endoscopic image into homogenous segments (spatially connected groups of pixels) such that that the union of any two neighboring segments yields a heterogeneous segment (see page 1684, section 1, [p][001])

As to claim 5, note the discussion above, neither Shankar or Haris teaches the method, characterized in that the two corrections stages are interchangeable and are carried out in an iterative way. However, it would have been obvious for one skilled in

the art to interchangeable the two corrections stages or carried the correction stage iterative to meet design required and carry out either correction method does solve any particular problem.

6. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shankar et al (US Patent No.: 6,885,801) in view of Harris et al (NPL Document titled: Hybrid Image Segmentation Using Watersheds and Fast Region Merging) further in view of Miyazaki (US Patent No.: 4,926,257).

As to claim 7, note the discussion above, Haris teaches the method, characterized in that the prefiltering stage comprises a morphological opening stage (see page 1687, section IV, [p][002], lines 1-9) followed by an image-inversion stage. However, neither Shankar nor Haris teach an image-inversion stage. Miyazaki teaches an image-inversion stage (see column 1, lines 30-42). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have combined the teaching of Shankar as modified by Harris and Miyazaki to inverse the acquired images before output the images.

As to claim 8, note the discussion above, Miyazaki the method characterized in that the image-inversion stage is preceded by a scalar-type anisotropic scattering stage (see column 1, lines 40-45).

As to claim 9, Shankar teaches the method, characterized in that the prefiltering

also comprises a stage during which an interpolation to the nearest neighbour is carried out in order to double the size of the image vertically and horizontally (see column 5, lines 40-45).

As to claim 10, note the discussion above, Haris teaches the method characterized in that, in the presence of a plurality of acquisition images, the prefiltering also comprises a temporal filtering stage (see abstract).

7. Claims 26-30 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shankar et al (US Patent No.: 6,885,801) in view of Nomami et al (US Patent No.: 5,764,809)

As to claim 17, Shankar teaches the method, characterized in that the reconstruction of the acquired image involves a calibration stage in order to calibrate the flux of the acquired image, after local processing. However, Shankar does not expressly disclose a mosaic reconstruction stage. Nomami discloses a method for forming new images (column 1, lines 12-15) including a mosaic reconstruction stage (see column 6, lines 26-39). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to added the method for forming new images of Nomami to the method for enhancing images acquired through a fiber endoscope of Shankar for processing multiple images acquired from the same object to eliminate abnormal data



areas or provide a synthetic image having an enlarged field of view and improved resolution (see column 2, lines 7-12).

As to claim 34, note the discussion above, Nomami teaches the application of the image-processing method for super-resolution of an acquired image (see column 2, line 11).

As to claims 26-29, Shankar does not expressly disclose the method characterized in that the reference image is an image obtained by placing a mirror opposite the guide, characterized in that the reference image is an image obtained from a homogeneous scattering medium, characterized in that the reference image is an image obtained from a homogeneous fluorescent medium and characterized in that the reference image is an image obtained from the backscattering inside the bundle of optical fibres constituting the guide. However, it would have been obvious for one skilled in the art to acquire the reference image by placing a mirror opposite the guide or from a homogeneous scattering medium or from a homogeneous fluorescent medium or from the backscattering inside the bundle of optical fibres constituting the guide because these are well known method for acquire images and backscattering for example has the characteristic of detecting optical faults (OFFICIAL NOTICE).

As to claim 30, Shankar teaches the method, characterized in that the reference

image is the acquired image (note that the fiber mask is generated).

***Allowable Subject Matter***

8. Claims 11-16, 18-25 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Inquires***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDRAE S. ALLISON whose telephone number is (571)270-1052. The examiner can normally be reached on Monday-Friday, 8:00 am - 5:00 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wes Tucker/  
Primary Examiner, Art Unit 2624

/A. S. A./  
Examiner, Art Unit 2624